

II. HERMIT-CRABS FROM THE CHILKA LAKE.

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The small collection of Paguridæ which forms the subject of this paper was obtained by Dr. N. Annandale and Mr. S. W. Kemp, during their survey of the Chilka Lake, on the Orissa Coast in the Bay of Bengal. Of the five species taken it has only been found necessary to describe one as new. In each of the previously known species reference is made to Col. A. Alcock's "Catalogue of the Indian Decapod Crustacea in the collection of the Indian Museum," part II, Anomura, Fasc. I, Pagurides (1905), where a full bibliography will be found.

Clibanarius padavensis, de Man.

Alcock, p. 44, pl. iv, fig. 2.

Station 22¹, 8698/10. Five specimens of moderate size, including a female with ova.

Station 75, 8700/10. A young specimen with the carapace measuring only 7 mm. in length, yet possessing all the characteristic colour markings.

Station 82, 8705/10. A male, and a female with ova, of moderate size, the carapace of the former measuring 16 mm. in length; also a very young specimen.

Station 83, 8696/10. Six individuals of moderate size, the carapace of the largest (a female) measuring 18 mm. in length.

This species, which shows a special predilection for brackish water, occurs in suitable localities round the Indian coast from Burma to Bombay. It has also been recorded from Singapore, Queensland, New Guinea and New Caledonia.

Clibanarius longitarsis, de Haan.²

Alcock, p. 158.

Station 142, 8968/10. In *Purpura* shells. Two specimens, male and female, the latter which is slightly larger with the carapace 11 mm. long.

¹ An explanation of the station numbers will be given in a subsequent paper dealing in a general manner with the results of our survey of the Lake. (N. A.)

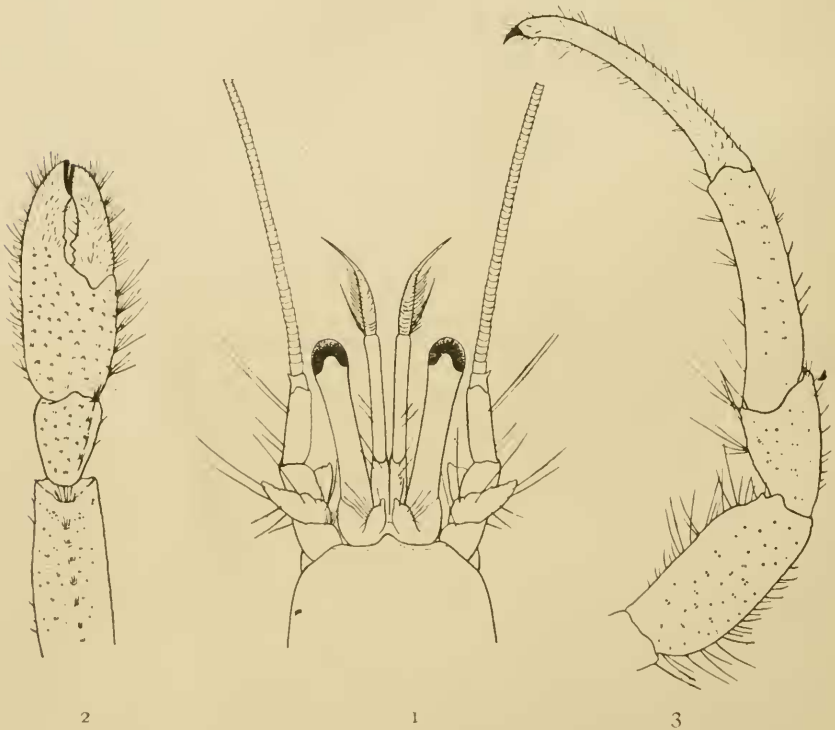
² I take this species as characterized by de Man in his account of the Crustacea collected by Dr. Brock in the Malay Archipelago (Archiv. f. Nat. LIII, p. 441, 1887).

This record is interesting as it tends to show that the species, which was previously known only from the southern part of the east coast so far as India is concerned, probably occurs in suitable localities all along this coast. It is the commonest brackish-water pagurid on the Coromandel coast.

C. longitarsis has been found in various localities from East Africa to Japan.

***Clibanarius olivaceus*, n. sp.**

Station 22, 8698/10. Two males and two females. Also 8710/10, a male, and 8708/10 a very young specimen in a fragmentary condition which probably belongs to the present species.



Clibanarius olivaceus, n. sp.: 1. anterior part of carapace, eyestalks, etc. from above; 2. left cheliped from above; 3. last four segments of second leg from above.

Station 142, 8967/10. A female with the carapace 9 mm. long. Some small individuals of this species were taken by Dr. Annandale near the mouth of the Adyar River, Madras, in October 1913.

Carapace with the usual tufts of setae, which are most numerous towards the sides and immediately behind the cervical groove. Rostrum moderately prominent, reaching a little beyond the antennal angles of the carapace.

Eyestalks distinctly longer than the anterior border of the carapace and almost as long as the antennular peduncles; the eye occupies about one-tenth of the length of the stalk. Ophthalmic scales with the outer edge setose and faintly spinose.

Antennal acicle setose and slightly spinose, the proximal spinule being most prominent, scarcely reaching the terminal joint of the peduncle; flagellum about one and a half times as long as the carapace.

Chelipeds subequal and similar; merus with the upper margin obscurely serrulate and two spinules at the distal end of the outer lower margin; carpus with a distinct spinule at the distal end of the upper margin and two or three smaller spinules further back on the margin; hand only slightly roughened and comparatively free of setae, with no spines anywhere on its palmar surface; fingers rougher and more setose than the palm, the projections almost becoming spinose towards the finger-tips, when closed exhibiting an intervening hiatus. The length of the hand, including the fingers, is about twice its breadth.

The second and third legs exceed the chelipeds on both sides by the length of the dactyli and nearly half the propodi; a spinule is present at the lower distal end of the merus and another at the upper distal end of the carpus in both pairs of legs. The dactylus of the third leg is about one-fourth longer than the corresponding propodus; the dactylus of the second leg while shorter is still distinctly longer than its propodus.

The colour of spirit specimens is yellowish, with the chelipeds and second and third pairs of legs olive green. The only distinct bands of colour are three pale red lines, on the inner upper and outer surfaces of the eyestalks, though in the specimen from station 142 the upper line is obsolescent. The meral and carpal joints of the second and third legs, particularly the former, show a faint bluish green colour near the upper posterior surface and a reddish brown tinge near the lower margin, but these colours are not sufficiently circumscribed to constitute bands. The dactyli of the second and third legs are buff-coloured.

Length of carapace (in a male) 12 mm., breadth of anterior border of the carapace 4 mm., length of eyestalk 5.5 mm., length of dactylus of second left leg 9.5 mm., length of propodus of second left leg 7.5 mm. The left eyestalk of the type specimen is shorter than the right and is evidently in process of regeneration.

This species is closely related to *C. padavensis*, de Man, and *C. longitarsis* (de Haan), both of which commonly occur in brackish water in India. It agrees with them in the long dactyli of the second and third legs, and in the long eyestalks, which are longer than the anterior border of the carapace, but is readily distinguished from both by its colouration.

In *C. padavensis*¹, there are very distinct deep red or

¹ My remarks on *C. padavensis*, in the Journ. As. Soc. Bengal. LXV, pt. ii, p. 520, 1896, were made in error and really apply to *C. longitarsis*.

crimson lines on the second and third legs, eyestalks and chelipeds. In *C. longitarsis*, a pale blue band bordered above and below by red brown occurs on the joints of the second and third legs, being best marked on the propodi, and there are no colour lines on the eyestalks or chelipeds. These distinctive marks are present at all stages of growth, and I am of opinion that colour is a fairly reliable character in separating the species of *Clibanarius*.

In addition to the colour differences, the hand of *C. olivaceus* is much smoother and less hirsute on the upper surface, while the inner margin is devoid of the spinules which occur in the two other species.

Clibanarius sp.

Station 82, 8709/10. Five very small individuals which are too young to identify satisfactorily. They perhaps belong to the last species.

Diogenes miles (Herbst).

Alcock, p. 67, pl. vi, fig. 5.

Ganjam Coast outside the southern part of the Chilka Lake, in a *Volva* shell, 8706/10. A female with ova in which the carapace measures 15 mm. in length.

This species, which is common on the east coast of India, but so far as I know does not affect brackish water, has a characteristically flattened carapace, and the hand of the left or larger cheliped can be bent almost at right angles to the wrist, the result of living in shells with a long narrow aperture.

Diogenes avarus, Heller.

Alcock, p. 68, pl. vi, fig. 6.

Station 71, 8703/10. Three small specimens.

Station 91, 8764/10. Eleven small specimens, including several females with ova in which the carapace measures less than 5 mm. in length. Also 8707/10; two small specimens.

Station 93, 8701/10. Seven small specimens, one of which, a female with ova, has the carapace 5 mm. long.

Station 94, 8702/10. Two minute specimens.

This small species is common in the South Indian backwaters, but also occurs in the sea, both between tidemarks in places such as the shores of the Gulf of Manar where the surf is not excessive, and in shallow water. As was first pointed out by de Man the lengthening of the carpus and band of the larger cheliped, which is so characteristic a feature of adult males, is much less marked in females and young males. Some individuals appear to attain maturity while of small size; in the present collection there are several females with ova in which the carapace measures 5 mm. in length or even less, while individuals from other localities are found at least double this size.

***Cænobita rugosus*, Milne-Edwards.**

Alcock, p. 143, pl. xiv, fig. 3.

Station 107, 8966/10. A small specimen in a *Natica* shell.

Station 123, 8965/10. A small specimen.

These specimens, which are evidently immature, as the carapace of the larger one measures only 10 mm. in length, appear to belong to this common Indo-Pacific species. They possess a stridulating organ composed of an oblique row of elongated parallel teeth, on the outer surface of the left palm, and the outer surface of the propodite of the third left leg is separated from the anterior surface by a distinct ridge.

***Cænobita cavipes*, Stimpson.**

Alcock, p. 146, pl. xiv, fig. 1.

= *C. violascens*, Heller, and *C. compressus*, Ortmann.

Station 79, 8699/10. Three young specimens.

Station 82, 8695/10. A number of young specimens, the largest of which is a female with the carapace 14 mm. long.

Station 95, 8697/10. A half-grown male.

The lower part of the outer surface of the left palm is smooth, and as pointed out by Stimpson is mahogany coloured.

This species is very common in the neighbourhood of the backwaters along the east coast of India, and is frequently found at some distance from the water. It is most active at night.